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| EXAMINER | |
|---|---|
| SINGH, HIRDEPAL | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/538,152 | FRITSCH ET AL. | |
| | Examiner | Art Unit | |
| | HIRDEPAL SINGH | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *13,17,19,23,26,29,31,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,17,19,23,26,29,31,33 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 June 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

**DETAILED ACTION**

1. In response to the appeal brief filed on October 08, 2008, PROSECUTION IS HEREBY REOPENED. A Non final action is set forth below in view of new ground(s) of rejection.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611

***Response to Arguments***

2. Applicant's arguments filed October 08, 2008 with the Appeal brief have been fully considered but they are not persuasive.

3. Applicant argues that "...Burgess does not include predecessor/successor information in his component objects. Instead his directed relationships are defined at the graphical mapping stage by the programmer... (Burgess) describe visual programming as illustrated in FIG 4, in which a programmer graphically configures the directed relationships..." (Remarks page 6).

4. Examiner respectfully traverses Applicant's opinion because Burgess's components relationship is not defined by the programmer, instead the system shields (protects) the programmer or developer from details of connecting of components (see column 2, lines 18-21), also in the system the message is sent from dispatching to target member (column 2, lines 28-32) i.e. the connections are defined which means who sends and who receives the message (as described on page 8 of present invention paragraph 0020, lines 21-24).

5. Applicant argument about the intended use is a misunderstanding of the rejected limitation, in the previous office action the intended use is about the generation of automation code in a manufacturing plant.

6. The Applicant's argument "...Sakurai provides standard program modules previously coded by program engineers. These standard modules are independent of plant type ... There is no teaching that the standard program modules include a previously entered description of predecessor/successor relationship for plant components..." (Remarks page 8), is respectfully traversed because in Sakurai system the inputted plant operation procedure is defined in a flow chart (SFC), the plant operation and sequential control flow is defined in a chart and block diagram (column 4,

lines 36-48) which means the information about the operation and process in the plant in defined in a chart and used for generation of automation code.

7. Applicant's argument "...Sakurai ... describe visually monitoring of a PLC program while it is executing, in order to verify proper program operation -- not graphically configuring a specification for automatic code generation." (Remarks page 9) is respectfully traversed as Sakurai column 4, lines 36-42 describes plant operation procedure specified in a flow chart and block diagram.

8. Applicant argues that "...Elmqvist ... tank system layout only exists after the visual designer has selected the graphic components and placed them in this order. These graphical components do not have predecessor/successor descriptions stored in them to require an order based on a material flow and prevent mistakes..." (Remarks page 9).

9. Examiner respectfully traverses Applicant's opinion because Elmqvist architecture for automation is based on sequence control (abstract lines 2-4) i.e. a sequence of events or processes. The architecture graphically connects the predefined modules of the system (System overview, lines 8-10). Also the automation code or program is generated based on the physical objects that are present in the plant (connecting of the object and sequence of processing includes the material flow, see Object and data flow based language), the physical objects doesn't come into existence after the designer selects them, but the designer's code is based on the physical objects.

10. The Applicant's argument about Kroeger's project management task records may be edited/added at any time, thus changing their sequence; is respectfully traversed as the editing of tasks is an option not a necessity. Also it is similar to have a change in the layout of plant or a different process to take place in the plant or different relationship of components in a plant that may require a change or editing in the description required for code generation in the particular plant. Similarly Kroeger's process management is editable accordingly.

11. The argument presented by the Applicant about incompatibility of Kroeger is noted and traversed because in accordance with the Patent examining policies and procedures, References from different fields of endeavor may be combined under an obviousness rejection based on design incentives, market forces etc. predictable to a person of ordinary skill in the art. However, for the convenience of understanding the rejection more clearly for predecessor successor relationships a new ground of rejection is brought in.

***Claim Rejections - 35 USC § 112***

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 13, 17, 19, 23, 26, 29, 31, 33 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. Claims 13, 26 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

15. According to MPEP:

**2173.05(r) Omnibus Claim**

Some applications are filed with an omnibus claim which reads as follows: A device substantially as shown and described. This claim should be rejected under 35 U.S.C. 112, second paragraph, because it is indefinite in that it fails to point out what is included or excluded by the claim language. See *Ex parte Fressola*, 27 USPQ2d 1608 (Bd. Pat. App. & Inter. 1993), for a discussion of the history of omnibus claims and an explanation of why omnibus claims do not comply with the requirements of 35 U.S.C. 112, second paragraph.
Such a claim can be rejected using Form Paragraph 7.35. See MPEP § 706.03(d).
For cancellation of such a claim by examiner's amendment, see MPEP § 1302.04(b).

**2173.05(s) Reference to Figures or Tables**

Where possible, claims are to be complete in themselves. Incorporation by reference to a specific figure or table "is permitted only in exceptional circumstances where there is no practical way to define the invention in words and where it is more concise to incorporate by reference than duplicating a drawing or table into the claim. Incorporation by reference is a necessity doctrine, not for applicant's convenience." *Ex parte Fressola*, 27 USPQ2d 1608, 1609 (Bd. Pat. App. & Inter. 1993) (citations omitted).
Reference characters corresponding to elements recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. See MPEP § 608.01(m).

16. The Independent claims 13, 26 and 33 recites that the automation code is generated based on description described in a drawing. That makes the claims indefinite in that it fails to point out what is included or excluded by the claim language. However, in this office action examiner interpret the claims as the plant information related to layout, material flow is inputted in the system for code generation.

### *Claim Rejections - 35 USC § 101*

17. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

18. Claims 26, 29 and 31 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claims neither transform underlying subject matter nor positively tie to another statutory category (e.g. a mechanism for generating code using a coordinate controller as described in the specification ) that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

### *Drawings*

19. The drawing figures 1-3 are objected to because there are no labels for any of the blocks. These blocks need to have descriptive labels under 37 CFR 1.84(n) and 1.84(o). For example, "ports" may be used for the label of block number 6 in figure 1.

### *Claim Rejections - 35 USC § 103*

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

21. Claims 13, 26 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burgess (US 5,805,896), in view of Sakurai et al. (US 6,334,076), in view of Kroeger (US 2002/0165723) and further in view of Elmqvist ("A Uniform Architecture for distributed automation", Advances in Instrumentation and Control, Instrument Society of America, Research Triangle Park, NC US, Vol. 46, Part 2, 1991; Pages, 1599-1608).

**Regarding Claims 13 and 26:**

Burgess discloses a system and method for producing software/code using links of the components of the system (summary of the invention) comprising:

sending messages between the components through the ports and the data is being transferred between the components (column 2, lines 23-30), therefore it is inherent that the message transfer is taking place as signals through the ports;

the event objects include message information describing the message i.e. information about information, and the derived class provides behavior specific to a type of message i.e. message is the information and type of message is metainformation i.e. information about information (column 2, lines 23-40), also the system components are sending and receiving the temperature data and also converting from one scale to another i.e. Fahrenheit to Centigrade and vice versa (figures 4-7; column 3, lines 20-58), in this case the temperature data is the information and the information whether the temperature scale in Fahrenheit or Centigrade is metainformation i.e. information about information;

producing a program code by interconnecting the signals based on the directed connections of the components (column 4, lines 35-50; producing a class is referred to as a program code; system shields (protects) the programmer or developer from details of connecting of components see column 2, lines 18-21; also in the system the message is sent from dispatching to target member, see column 2, lines 28-32)

Burgess discloses all of the subject matter as described above and further discloses that the components have input and output ports, represented by corresponding symbols/functional blocks/modules (column 1, lines 45-64; column 2, lines65-67; column 3, lines 1-19) and; the components are connected through their ports, directed relationship of the components are defined (column 3, lines 29-34, lines 54-57; column 4, lines 1-16), but doesn't specifically teach that (1) the code generation is for a manufacturing and/or processing plants, and the automation code is generated on the basis of a structure of the plant and know how, including predecessor/successor relationship (similar to directed relationship in Burgess), previously input into the description; (2) the components are described in drawing comprising control relevant information in the manufacturing and/or processing plant; (3) the control information described in the drawing is based on the material flow in the manufacturing and/or processing plant.

Regarding item (1) above, Examiner notes that code generation for a manufacturing and/or processing plants this is just an intended use, therefore little if any patentable weight is given.

However, regarding item (1), Sakurai in the same field of endeavor discloses a similar system and method for automatically generating a control program/code for plants such as rolling plants, power plants, and chemical plants (abstract, technical field); and the automation code is generated on the basis of a structure of the plant and know how previously input into the description (plant operation procedure is defined in a flow chart (SFC), and sequential control flow is defined in a chart and block diagram see column 4, lines 36-48; which means the information about the operation and process in the plant in defined in a chart and used for generation of automation code; also figure 10; column 10, lines 60-67); regarding item (2) above, Sakurai discloses that the components of the system are represented by functional modules in form of drawings or pictures or graphics based on the control relevant information i.e. operation procedure, and the system is controlled by modifying the drawings or graphics or pictures of the described component modules (column 2, lines 20-51) where a picture representative of the plant operation control specification entered for the generation of a program can be viewed on crt (column 4, lines 8-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the disclosed system for code generation by Sakurai in Burgess in a manufacturing and/or processing plant to generate automation code for controlling a manufacturing and/or process plant based on the plant layout and a relationship of component how the process flows in a plant to generate the automation code to allow a person with little programming knowledge to generate the code, and to make system capable of checking and modifying the function of automatically generated code before

the plant is caused to run actually based on the information available about the plant or factory to reduce errors that may be caused by choosing a different or reverse direction of process or material flow in the plant.

Regarding item (3) above, Elmqvist discloses a similar system and method for distributed automation with a graphical programming environment for programming/software generation by graphically connecting the predefined modules (abstract, page 1599; paragraph 4, page 1600), and further discloses that the control information in drawing or graphic is based on the physical objects present in the processing or manufacturing plant as pumps, pump stations, robots, roller tables etc. (paragraph; Object and data flow based language, page 1600). This is inherent that the physical objects of the plant form the path for material or fluid flow as shown in the example of tank system (figures 1-5) i.e. the system is controlling the process based on the material or fluid flow through the tanks, PID (process identifier) controllers, valves, and pumps (Tank system, page 1601).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a drawing or picture or graphic having control relevant information based on material flow in a plant for code generation in Burgess in order to combine the graphically represented components i.e. a drawing based on material flow in a plant of Elmqvist for code generation to help make use of the standard designing tools.

Regarding the Predecessor/successor relationships to make rejection clear following reference is used, Kroeger in the same field of endeavor discloses a system

and method for controlling a process where the directed relations between system components are defined as predecessor/successor relationships (paragraph 0112).

Therefore, it would have been obvious to try, to one of ordinary skill in the art the teachings of Kroeger in the Burgess system for predecessor/successor relationships for a finite number of identified, predictable solutions with reasonable success i.e. to implement the predecessor/successor relationships in the manufacturing plant to define the relation between components of the system as predecessor/successor relationships in burgess system in order to get the proper order for the execution of the program based on the priority of the process.

**Regarding Claim 33:**

Burgess discloses a system and method for producing software/code using links of the components of the system (summary of the invention) comprising:

the components of the system have input and output ports for data or message communication (column 1, lines 45-64; column 2, lines65-67; column 3, lines 1-19);

the components are connected through their ports for communicating or sending/receiving messages i.e. a communication network between the components of the system, and a controller i.e. a class object controls the communication of messages between the components (column 4, lines 1-50) and the components are connected through their ports, directed relationship of the components are defined (column 3, lines 29-34, lines 54-57; column 4, lines 1-16);

the components have input and output ports, represented by corresponding symbols/functional blocks/modules (column 1, lines 45-64; column 2, lines65-67;

column 3, lines 1-19), and the components are connected through their ports, direction of the connection is indicated between input and output ports (column 3, lines 29-34, lines 54-57; column 4, lines 1-16);

producing a program code for the processing or manufacturing plant based on the control information flow and the directed connections of the components (column 4, lines 35-50; producing a class is referred to as a program code).

Burgess discloses all of the subject matter as described above except for specifically teaching that (1) the code generation is for a manufacturing and/or processing plants; (2) the described components of the plant comprising function module and the function module being a reusable software object that defines characteristics and functions of the elements of the plant; and (3) the components are described in drawing comprising control relevant information based on material flow in the manufacturing and/or processing plant.

Regarding item (1) above, Examiner notes that this is just an intended use, therefore little if any patentable weight is given.

Sakurai in the same field of endeavor discloses a similar system and method for automatically generating a control program/code for plants such as rolling plants, power plants, and chemical plants (abstract, technical field); and the automation code is generated on the basis of a structure of the plant and know how previously input into the description (figure 10; column 10, lines 60-67);

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the disclosed system for code generation in

Burgess in a manufacturing and/or processing plant to generate automation code for controlling a manufacturing and/or process plant to allow a person with no programming knowledge to generate the code, and to make system capable of checking and modifying the function of automatically generated code.

Regarding item (2) above, Sakurai discloses a similar system and method for automatically generating a control program/code for plants such as rolling plants, power plants, and chemical plants as above, and further discloses that the components of the system are represented by functional modules, and the function modules are reusable or the combination of modules is selected according to the operation and procedure of the plant (column 2, lines 20-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the function module of the components of plant with connections for communication, as reusable software object for code generation in Burgess to combine the function module as reusable software code, defining functions and characteristics of elements of the plant for code generation to help make use of the standard designing tools.

Regarding item (3) above, Sakurai discloses that the components of the system are represented by functional modules in form of drawings or pictures or graphics based on the control relevant information i.e. operation procedure, and the system is controlled by modifying the drawings or graphics or pictures of the described component modules (column 2, lines 20-51). Furthermore, Elmqvist discloses a similar system and method for distributed automation with a graphical programming environment for software

generation by graphically connecting the predefined modules (abstract, page 1599; paragraph 4, page 1600), and further discloses that the control information in drawing or graphic is based on the physical objects present in the processing or manufacturing plant as pumps, pump stations, robots, roller tables etc. (paragraph; Object and data flow based language, page 1600). This is inherent that the physical objects of the plant form the path for material or fluid flow as shown in the example of tank system (figures 1-5) i.e. the system is controlling the process based on the material or fluid flow through the tanks, PID (process identifier) controllers, valves, and pumps (Tank system, page 1601).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a drawing or picture or graphic having control relevant information based on material flow in a plant for code generation in Burgess to combine the graphically represented components i.e. a drawing based on material flow in a plant of Elmqvist for code generation to help make use of the standard designing tools.

Regarding the Predecessor/successor relationships to make rejection clear following reference is used, Kroeger in the same field of endeavor discloses a system and method for controlling a process where the directed relations between system components are defined as predecessor/successor relationships (paragraph 0112).

Therefore, it would have been obvious to try, to one of ordinary skill in the art the teachings of Kroeger in the Burgess system for predecessor/successor relationships for a finite number of identified, predictable solutions with reasonable success i.e. to

implement the predecessor/successor relationships in the manufacturing plant to define the relation between components of the system as predecessor/successor relationships in burgess system in order to get the proper order for the execution of the program based on the priority of the process.

22. Claims 13, 17, 19, 23, 26, 29, 31, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burgess (US 5,805,896), in view of Sakurai et al. (US 6,334,076), further in view of Elmqvist ("A Uniform Architecture for distributed automation", Advances in Instrumentation and Control, Instrument Society of America, Research Triangle Park, NC US, Vol. 46, Part 2, 1991; Pages, 1599-1608) and in view of Leisten et al. (US 6,023,702).

**Regarding Claims 13 and 26:**

Burgess discloses a system and method for producing software/code using links of the components of the system (summary of the invention) comprising:

sending messages between the components through the ports and the data is being transferred between the components (column 2, lines 23-30), therefore it is inherent that the message transfer is taking place as signals through the ports;

the event objects include message information describing the message i.e. information about information, and the derived class provides behavior specific to a type of message i.e. message is the information and type of message is metainformation i.e. information about information (column 2, lines 23-40), also the system components are sending and receiving the temperature data and also converting from one scale to

another i.e. Fahrenheit to Centigrade and vice versa (figures 4-7; column 3, lines 20-58), in this case the temperature data is the information and the information whether the temperature scale in Fahrenheit or Centigrade is metainformation i.e. information about information;

producing a program code by interconnecting the signals based on the directed connections of the components (column 4, lines 35-50; producing a class is referred to as a program code; system shields (protects) the programmer or developer from details of connecting of components see column 2, lines 18-21; also in the system the message is sent from dispatching to target member, see column 2, lines 28-32)

Burgess discloses all of the subject matter as described above and further discloses that the components have input and output ports, represented by corresponding symbols/functional blocks/modules (column 1, lines 45-64; column 2, lines65-67; column 3, lines 1-19) and; the components are connected through their ports, directed relationship of the components are defined (column 3, lines 29-34, lines 54-57; column 4, lines 1-16), but doesn't specifically teach that (1) the code generation is for a manufacturing and/or processing plants, and the automation code is generated on the basis of a structure of the plant and know how, including predecessor/successor relationship (similar to directed relationship in Burgess), previously input into the description; (2) the components are described in drawing comprising control relevant information in the manufacturing and/or processing plant; (3) the control information described in the drawing is based on the material flow in the manufacturing and/or processing plant.

Regarding item (1) above, Examiner notes that code generation for a manufacturing and/or processing plants this is just an intended use, therefore little if any patentable weight is given.

However, regarding item (1), Sakurai in the same field of endeavor discloses a similar system and method for automatically generating a control program/code for plants such as rolling plants, power plants, and chemical plants (abstract, technical field); and the automation code is generated on the basis of a structure of the plant and know how previously input into the description (plant operation procedure is defined in a flow chart (SFC), and sequential control flow is defined in a chart and block diagram see column 4, lines 36-48; which means the information about the operation and process in the plant in defined in a chart and used for generation of automation code; also figure 10; column 10, lines 60-67); regarding item (2) above, Sakurai discloses that the components of the system are represented by functional modules in form of drawings or pictures or graphics based on the control relevant information i.e. operation procedure, and the system is controlled by modifying the drawings or graphics or pictures of the described component modules (column 2, lines 20-51) where a picture representative of the plant operation control specification entered for the generation of a program can be viewed on crt (column 4, lines 8-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the disclosed system for code generation by Sakurai in Burgess in a manufacturing and/or processing plant to generate automation code for controlling a manufacturing and/or process plant based on the plant layout and a relationship of

component how the process flows in a plant to generate the automation code to allow a person with little programming knowledge to generate the code, and to make system capable of checking and modifying the function of automatically generated code before the plant is caused to run actually based on the information available about the plant or factory to reduce errors that may be caused by choosing a different or reverse direction of process or material flow in the plant.

Regarding item (3) above, Elmqvist discloses a similar system and method for distributed automation with a graphical programming environment for programming/software generation by graphically connecting the predefined modules (abstract, page 1599; paragraph 4, page 1600), and further discloses that the control information in drawing or graphic is based on the physical objects present in the processing or manufacturing plant as pumps, pump stations, robots, roller tables etc. (paragraph; Object and data flow based language, page 1600). This is inherent that the physical objects of the plant form the path for material or fluid flow as shown in the example of tank system (figures 1-5) i.e. the system is controlling the process based on the material or fluid flow through the tanks, PID (process identifier) controllers, valves, and pumps (Tank system, page 1601).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a drawing or picture or graphic having control relevant information based on material flow in a plant for code generation in Burgess in order to combine the graphically represented components i.e. a drawing based on material flow

in a plant of Elmqvist for code generation to help make use of the standard designing tools.

Regarding the Predecessor/successor relationships to make rejection clear following reference is used; Leisten discloses a system and method of computer system for process and project management for design and manufacturing a product in a plant (column1, lines 15-18) where information for the code generation describing activity types or processes or controls is defined and the directed relationships between predecessor and successor activities are always well defined (column 20, lines 40-48)

Therefore, it would have been obvious to try, to one of ordinary skill in the art the teachings of Leisten in the Burgess system for predecessor/successor relationships for a finite number of identified, predictable solutions with reasonable success i.e. to implement the predecessor/successor relationships in the manufacturing plant to define the relation between components of the system as predecessor/successor relationships in burgess system in order to get the proper order for the execution of the program based on the priority of the process.

**Regarding Claims 17 and 29:**

Burgess discloses all of the subject matter as described above and further discloses an input device/means for inputting relevant information for producing software code (column 14, lines12-18; fig 9).

**Regarding Claim 19:**

Burgess discloses all of the subject matter as described above except for specifically teaching that the method for distributed automation with graphical connection represents information flow, and a data flow model.

Elmqvist in the same field of endeavor discloses that the method for distributed automation with graphical connection represent information flow, and a data flow model (page 1601, paragraph 4; page 1605, paragraph 10).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the material flow, and/or energy flow, and/or information flow as a basis for mapping the directed relationships between the components in Burgess system in order to use the material flow, and/or energy flow, and/or information flow as a basis for mapping the directed relationships between the components to make the automation code more effective and error free as the manufacturing and/or processing plant layout and planning is according to the material flow, and/or energy flow, and/or information flow.

**Regarding Claims 23 and 31:**

Burgess discloses all of the subject matter as described above except for specifically teaching that the system and method is for distributed automation with automated cooperation for distributed objects; and the system could be a central system.

Elmqvist in the same field of endeavor discloses that the system and method is for distributed automation with automated cooperation for distributed objects (page 1599, abstract paragraph 2; page 1605, paragraph 5). However, official notice is taken

that it is old and well known within the computer art that if automated code generation is used for distributed system then it could be used for central system too.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the disclosed system in Burgess for central and/or distributed solutions to use the disclosed system for central and/or distributed solutions to control the distributed components with a central controller or to control the components with a central controller as required.

**Regarding Claim 33:**

Burgess discloses a system and method for producing software/code using links of the components of the system (summary of the invention) comprising:

the components of the system have input and output ports for data or message communication (column 1, lines 45-64; column 2, lines65-67; column 3, lines 1-19);

the components are connected through their ports for communicating or sending/receiving messages i.e. a communication network between the components of the system, and a controller i.e. a class object controls the communication of messages between the components (column 4, lines 1-50) and the components are connected through their ports, directed relationship of the components are defined (column 3, lines 29-34, lines 54-57; column 4, lines 1-16);

the components have input and output ports, represented by corresponding symbols/functional blocks/modules (column 1, lines 45-64; column 2, lines65-67; column 3, lines 1-19), and the components are connected through their ports, direction

of the connection is indicated between input and output ports (column 3, lines 29-34, lines 54-57; column 4, lines 1-16);

producing a program code for the processing or manufacturing plant based on the control information flow and the directed connections of the components (column 4, lines 35-50; producing a class is referred to as a program code).

Burgess discloses all of the subject matter as described above except for specifically teaching that (1) the code generation is for a manufacturing and/or processing plants; (2) the described components of the plant comprising function module and the function module being a reusable software object that defines characteristics and functions of the elements of the plant; and (3) the components are described in drawing comprising control relevant information based on material flow in the manufacturing and/or processing plant.

Regarding item (1) above, Examiner notes that this is just an intended use, therefore little if any patentable weight is given.

Sakurai in the same field of endeavor discloses a similar system and method for automatically generating a control program/code for plants such as rolling plants, power plants, and chemical plants (abstract, technical field); and the automation code is generated on the basis of a structure of the plant and know how previously input into the description (figure 10; column 10, lines 60-67);

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the disclosed system for code generation in Burgess in a manufacturing and/or processing plant to generate automation code for

controlling a manufacturing and/or process plant to allow a person with no programming knowledge to generate the code, and to make system capable of checking and modifying the function of automatically generated code.

Regarding item (2) above, Sakurai discloses a similar system and method for automatically generating a control program/code for plants such as rolling plants, power plants, and chemical plants as above, and further discloses that the components of the system are represented by functional modules, and the function modules are reusable or the combination of modules is selected according to the operation and procedure of the plant (column 2, lines 20-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the function module of the components of plant with connections for communication, as reusable software object for code generation in Burgess to combine the function module as reusable software code, defining functions and characteristics of elements of the plant for code generation to help make use of the standard designing tools.

Regarding item (3) above, Sakurai discloses that the components of the system are represented by functional modules in form of drawings or pictures or graphics based on the control relevant information i.e. operation procedure, and the system is controlled by modifying the drawings or graphics or pictures of the described component modules (column 2, lines 20-51). Furthermore, Elmqvist discloses a similar system and method for distributed automation with a graphical programming environment for software generation by graphically connecting the predefined modules (abstract, page 1599;

paragraph 4, page 1600), and further discloses that the control information in drawing or graphic is based on the physical objects present in the processing or manufacturing plant as pumps, pump stations, robots, roller tables etc. (paragraph; Object and data flow based language, page 1600). This is inherent that the physical objects of the plant form the path for material or fluid flow as shown in the example of tank system (figures 1-5) i.e. the system is controlling the process based on the material or fluid flow through the tanks, PID (process identifier) controllers, valves, and pumps (Tank system, page 1601).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a drawing or picture or graphic having control relevant information based on material flow in a plant for code generation in Burgess to combine the graphically represented components i.e. a drawing based on material flow in a plant of Elmqvist for code generation to help make use of the standard designing tools.

Regarding the Predecessor/successor relationships, to make rejection clear following reference is used; Leisten discloses a system and method of computer system for process and project management for design and manufacturing a product in a plant (column1, lines 15-18) where information for the code generation describing activity types or processes or controls is defined and the directed relationships between predecessor and successor activities are always well defined (column 20, lines 40-48)

Therefore, it would have been obvious to try, to one of ordinary skill in the art the teachings of Leisten in the Burgess system for predecessor/successor relationships for

a finite number of identified, predictable solutions with reasonable success i.e. to implement the predecessor/successor relationships in the manufacturing plant to define the relation between components of the system as predecessor/successor relationships in burgess system in order to get the proper order for the execution of the program based on the priority of the process.

**Regarding Claim 34:**

Burgess discloses all of the subject matter as described above except for specifically teaching that the control system comprises different zones with subsets of plant elements.

Elmqvist in the same field of endeavor discloses that the control system comprises different zones with subsets of plant elements i.e. the tank system with tank 1, PID 1 is a control zone with PID, valve as subset of elements of system, and PID controller work as the control coordinator as shown in the topology of the network of the system (figures 1-3; pages 1602-1603).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the software code generation of Burgess in a system with different control zones with plant elements including controllers. One would have been motivated to implement the generated code in a system with different control zones including plant elements and controllers to make all different components of system work in coordination for optimum results and control.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRDEPAL SINGH whose telephone number is (571) 270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off) 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/H. S./
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611